



## Optical Level Sensors



measuring  
•  
monitoring  
•  
analysing

OPT



- Repeatability:  $\pm 1$ mm
- $p_{\max}$ : 10 bar;  $t_{\max}$ : 80 °C
- Connection:  
G 1/2, M 14
- Material (sensor):  
Polysulfone  
Material (housing):  
Polypropylene or  
stainless steel



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**Description**

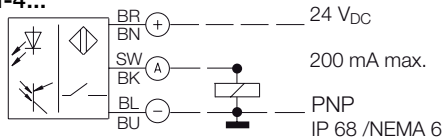
The optical level sensors of model OPT have been developed for monitoring **transparent** liquids. Due to the very small dimensions, very slight switching hysteresis and high repeatability, the instruments are also suited for service in small vessels. The optical sensor is situated in a robust housing. It comprises a plastic hollow hemisphere, in which the infrared diode is fitted as a transmitter and a semiconductor as a receiver. When the sensor is not wetted by liquid, the infrared light is reflected fully from the surface of the hemisphere to the receiver. As soon as the sensor is covered with liquid, the refractive index on the boundary layer changes and most of the light escapes into the liquid. Less light then reaches the receiver, which allows switching to take place. The level probe should not be fitted with the sensor pointing downwards, as errors can occur due to drops of liquid sticking to it.

**Applications**

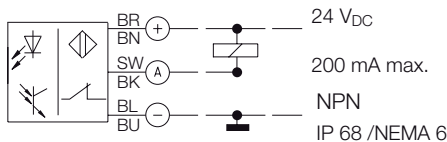
- Motor vehicle industry
- Leakage protection
- Medical technology
- Drinks vending machines

**Electrical connection diagram**

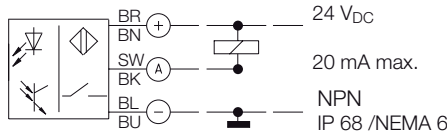
**OPT-4...**



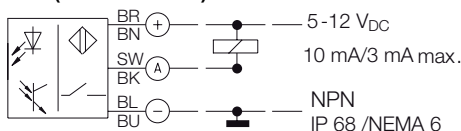
**OPT-5...**



**OPT-6...**



**OPT-0... (OEM version)**



**Technical Details**

Operating temperature: -20 ... +80 °C  
 Operating pressure: max. 10 bar  
 Protection: IP 68  
**Material**  
 Housing: OPT\_1\_\_: Polypropylene  
 OPT\_2\_\_: stainless steel (1.4301)  
 Polysulfone  
 Sensor: Polysulfone  
 Cable: Polyurethane 1,5 m, Ø 4,5 mm  
 O-ring: OPT\_2\_\_: FPM  
 Hexagon nut: OPT\_10: Polyamide  
 Flat gasket: OPT\_10: FPM  
**Electrical data**  
 Repeatability: ±1 mm  
 Hysteresis: ±1 mm  
 Response time: 50 µs (with rising level)  
 1 s (with falling level)  
 depending on viscosity

**OPT-0 (OEM-version, without CE-marking)**

Power supply: 5 - 12 V<sub>DC</sub> ± 5%  
 Current input: 15 mA typ. at 5 V<sub>DC</sub> (without load)  
 Output: NPN, open collector, function N/O contact (WET on)  
 Current output: 10 mA max. at 25 °C  
 3 mA max. at 80 °C

**OPT-4**

Power supply: 24 V<sub>DC</sub> ± 15%  
 Current input: 17 mA typ. at 24 V<sub>DC</sub> (without load)  
 Output: PNP, open collector, function N/O contact (WET on)  
 Current output: 200 mA, short-circuit-proof

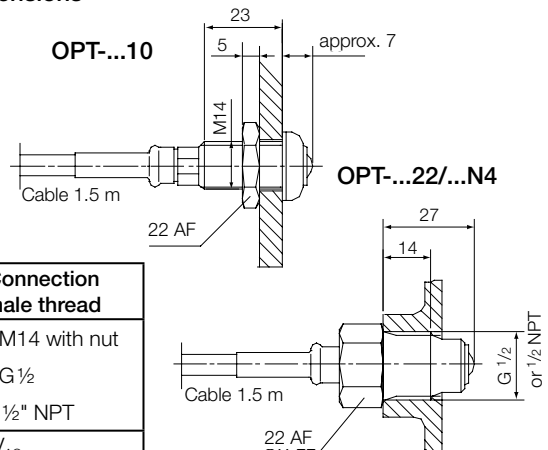
**OPT-5**

Power supply: 24 V<sub>DC</sub> ± 15%  
 Current input: 17 mA typ. at 24 V<sub>DC</sub> (without load)  
 Output: NPN, open collector, function N/C contact (DRY on)  
 Current output: 200 mA, short-circuit-proof

**OPT-6**

Power supply: 24 V<sub>DC</sub> ± 15%  
 Current input: 17 mA typ. at 24 V<sub>DC</sub> (without load)  
 Output: NPN, open collector, function N/O contact (WET on)  
 Current output: 20 mA max, not short-circuit-proof

**Dimensions**



**Order Details (Example: OPT-0 1 10)**

Model	Version	Housing material	Connection male thread
OPT-	0 = 5-12 V <sub>DC</sub> , NPN, OEM (without CE)	1 = Polypropylene 2 = stainless steel	10 = M14 with nut
	4 = 24 V <sub>DC</sub> ±15%, PNP		22 = G 1/2
	5 = 24 V <sub>DC</sub> ±15%, NPN		N4 = 1/2" NPT
	6 = 24 V <sub>DC</sub> ±15%, NPN		
MSR-010	Contact protecting relay for OPT-4 and OPT-5, 230 V <sub>AC</sub>		